Nebraska Epidemiology Report

Nebraska Health and Human Services System

Blood Lead Surveillance Data 1999 – 2000

Office of Epidemiology
Section of Environmental, Disease, and Vector Surveillance
Nebraska Health and Human Services, Department of Regulation and Licensure

Blood Lead Surveillance Data
1999 – 2000
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BACKGROUND

Lead poisoning can have serious and even fatal consequences at any age, but young children are especially vulnerable. Lead is an environmental toxicant that may deleteriously affect the nervous, hematopoietic, endocrine, renal, and reproductive systems[1]. Lead exposure in young children is particularly serious because children absorb lead more readily than do adults and because the developing nervous systems of children are more susceptible to the effects of lead. Blood lead levels (BLLs) as low as 10 µg/dL can adversely affect the behavior and development of children[2]. Permanent effects on physical, behavioral and cognitive development may result.

This data represents all cases of child blood lead levels reported to the Nebraska Department of Health and Human Services Regulation and Licensure, among Nebraska children under six years of age. Blood lead data are submitted by physicians, clinics, laboratories and hospitals, and are required by Nebraska law (Neb. Rev. Stat. Sections 71-501 to 71-506).

The two primary risk factors for elevated blood-lead are age of housing (pre-1950) and child poverty. Housing built before 1950 is more likely to contain lead-based paint, which can be ingested by young children in the form of dust or paint chips. The U.S. Environmental Protection Agency (EPA) estimates that 97% of all pre-1950 homes contain some lead-based paint[3]. Children in poverty are more likely to live in housing that contains lead contamination hazards due to the presence of deteriorating, flaking and chipping lead-based paint.

In Nebraska, according to the 1990 U.S. Census of Population and Housing, 38% of all residential units in the state were built before 1950. In most Nebraska counties, the proportion of housing built before 1950 is substantial, which suggests that many Nebraska children may be at risk. At particularly high risk are those children who reside in pre–1950 dwellings with deteriorating paint and pre-1978 dwellings with recent or ongoing remodeling or renovation because of the increased levels of lead-contaminated dust in these dwellings.

Initial screening at a young age, approximately 12 months old, is very important because early identification of the problem may help to prevent detrimental developmental effects. Indications are that while there are relatively few children with high blood lead levels diagnosed in the state, there are many children with some degree of elevated blood lead levels in each age group tested. Blood lead levels as low as 10µg/dL are associated with decreased intelligence and impaired neurobehavioral development. Within the population and age groups reported tested the proportion of those who are identified as having elevated blood lead levels increases as age increases. This suggests that there may be an incremental increase in lead accumulation in the blood as the child's age increases, supporting the recommendation that children be identified as having elevated blood lead levels at as early an age as possible, and that interventions be implemented as soon as possible.

Measures to reduce lead-based paint hazards, if implemented properly, can be very effective at reducing exposure to lead contamination. In the ideal situation these measures should be implemented prior to a young child being exposed or as soon as possible after a child's elevated blood lead level is detected.

DATA DESCRIPTION

During the year 2000, physicians, clinics, community action agencies, and public health departments screened 13,294 children. During the years 1995 through 2000, a total of 52,149 children were screened for elevated blood lead levels. In that group, 54 children had blood lead levels sufficiently elevated to qualify for hospitalization or chelation. During this same period, an additional 3,604 children had blood lead levels falling in the range in which detrimental psychological and physiological health effects have been demonstrated.

The screening data reflects several trends. First, our state's major urban centers contribute the greatest numbers and rates of children with elevated blood lead levels. Second, the number of children reported screened has continually increased and the companion number of children with elevated blood lead levels over those same years has decreased. Third, blood lead levels peak in children in the 12 to 36 months of age range. And lastly, male children generally have higher rates of elevated blood lead levels. These trends are also reflected in national surveys conducted by CDC.

The increased screening of children less than six years of age is likely a result of increased focus on lead poisoning prevention at the federal, state and local levels. Data for 2000 also show 4,343 one-year-old children were reported screened of the approximately 24,000 Nebraska children attaining the age of one during this time.

COMMENTS AND RECOMMENDATONS

In an effort to detect more children with elevated blood lead levels, it is currently recommended that all children be screened for elevated blood lead levels at 12 and 24 months, especially children living in pre-1950 housing, and children living in housing built before 1978 with recent or ongoing remodeling or renovation.

Additionally, current Medicaid policy requires that every child receiving a Early Prevention Screening and Diagnostic Test (EPSDT) Health Check examination be screened for elevated blood lead levels at least at ages 12 and 24 months.

To get information on lead poisoning prevention in young children contact the local health department, the HHSS Childhood Lead Poisoning Prevention Program at (888) 242-1100 or the US Environmental Protection Agency lead hotline at (800) 424-5323.

APPENDIX (Tables and Figures)

TABLE 1. Blood Lead Test Results by County and Year

County	Number of children tested				Number of children with elevated blood lead levels			
	1998	1999	2000	Change from 1998 to 2000	1998	1999	2000	Change from 1998 to 2000
Adams	4	8	15	11	1	1	2	1
Aantelope	25	19	37	12	2	3	2	
Arthur								
Banner	7		3	-4				
Blaine	3	2	4	1				
Boone	47	45	43	-4	5	7	1	-4
Box Butte	79	74	84	5	1	1	3	2
Boyd	3	16	22	19		1	1	1
Brown	22	20	43	21	1	1	1	
Buffalo	117	154	191	74	1	2	3	2
Burt	30	14	26	-4	1		2	1
Butler	17	26	57	40			5	5
Cass	40	71	94	54		4		
Cedar	42	13	41	-1			1	1
Chase								
Cherry	19	56	98	79	1		3	2
Cheyenne	11	8	55	44			2	2
Clay	3	30	26	23				
Colfax	71	104	241	170	11	4	4	-7
Cuming	24	41	54	30	2	2	1	-1
Custer	59	44	102	43	3		2	-1
Dakota	166	195	187	21	7	7	7	
Dawes	83	55	103	20	3		3	
Dawson	27	33	188	161	2	2	7	5
Deuel			10	10				
Dixon	19	22	24	5	1		1	
Dodge	206	227	309	103	7	4	3	-4
Douglas	3,366	5,234	5,864	2,498	402	432	333	-69
Dundy			1	1				
Fillmore	1	4	4	3			1	1
Franklin	8	5	11	3				
Frontier	13	1		-13				
Furnas	4	29	27	23			1	1
Gage	48	90	168	120	3	2	2	-1
Garden	2	2	3	1				
Garfield	17	23	31	14	4	1		-4
Gosper	1	1	4	3				
Grant	1	3	4	3			1	1
Greeley	25	28	40	15	2			-2
Hall	391	383	316	-75	25	11	8	-17
Hamilton	38	32	59	21	2		2	
Harlan	4	3	1	-3				
Hayes								
Hitchcock			5	5			1	1
Holt	94	135	118	24	1	1		-1
Hooker								
Howard	62	40	74	12	1		2	1
Jefferson	10	6	29	19			4	4
Johnson	36	42	16	-20	2			-2
Kearney	19	16	35	16		1		
Keith			16	16				

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County	Number of children tested				Number of children with elevated blood lead levels			
	1998	1999	2000	Change from 1998 to 2000	1998	1999	2000	Change from 1998 to 2000
Keya paha	4	3	1	-3				
Kimball	15	11	14	-1				
Knox	44	6	15	-29	3			-3
Lancaster	1,658	1,822	1,872	214	49	51	36	-13
Lincoln	4	5	45	41	1		2	1
Logan								
Loup	3	7	2	-1				
Madison	92	69	135	43	6	4	5	-1
Mcpherson								
Merrick	35	30	62	27	1	1	1	
Morrill	36	45	65	29	1	1	1	
Nance	21	19	34	13	1		1	
Nemaha	38	45	23	-15		1		
Nuckolls			3	3			1	1
Otoe	37	63	60	23	3	6	3	
Pawnee	22	12	9	-13	1			-1
Perkins								
Phelps	9	10	19	10	2			-2
Pierce	2	7	12	10				
Platte	161	288	438	277	7	6	15	8
Polk	6	14	20	14	1	1	1	
Red Willow	5	9	34	29		1		
Richardson	61	18	17	-44	3		3	
Rock	10	6	24	14	1			-1
Saline	13	75	77	64	2		1	-1
Sarpy	108	333	465	357	1	5	13	12
Saunders	54	93	108	54	2	2	3	1
Scottsbluff	278	317	384	106	12	11	9	-3
Seward	17	26	55	38		3	3	3
Sheridan	61	43	37	-24	1	1	1	
Sherman	26	19	37	11	1	1		-1
Sioux	2		7	5				
Stanton	22	6	19	-3	1			-1
Thayer		4	31	31			6	6
Thomas	1	5	1					
Thurston	38	30	24	-14	3			-3
Valley	25	31	53	28				
Washington	40	43	67	27	1		1	
Wayne	62	51	67	5	2			-2
Webster	1	1	13	12			2	2
Wheeler	11	9	7	-4				
York	8	9	15	7	2		1	-1
Unknown	97	6	40	-57	9			-9
Totals	8,391	10,944	13,294	4,903	608	582	518	-90

TABLE 2. Distribution of Blood Lead Levels in Children Less Than Six Years Old by Age Group for 2000

Age	Total Number	Number and Percentage of Tested By Blood Lead Level											
		<10 ug/dL		10-14 ug/dL		15-19 ug/dL		20-44 ug/dL		45-69 ug/dL		>70 ug/dL	
		n (%)		n (%)		n (%)		n (%)		n (%)		n (%)	
0-6 months	133	130	(97.74)	3	(2.26)								
7-11 months	1,473	1,448	(98.30)	21	(1.43)	3	(0.20)	1	(0.07)				
1 year	4,343	4,186	(96.38)	95	(2.19)	29	(0.67)	30	(0.69)	1	(0.02)	2	(0.05)
2 years	2,160	2,034	(94.17)	77	(3.56)	15	(0.69)	29	(1.34)	3	(0.14)	2	(0.09)
3 years	2,061	1,970	(95.58)	62	(3.01)	15	(0.73)	13	(0.63)			1	(0.05)
4 years	2,053	1,978	(96.35)	44	(2.14)	18	(0.88)	11	(0.54)	1	(0.05)	1	(0.05)
5 years	1,071	1,030	(96.17)	29	(2.71)	7	(0.65)	5	(0.47)				

TABLE 3. Distribution of Blood Lead Levels in Children Less than Six Years Old by Year

Annual Totals	Total Number	Number and Percentage of Tested By Blood Lead Level											
		<10 ug/dL		10-14 ug/dL		15-19 ug/dL		20-44 ug/dL		45-69 ug/dL		>70 ug/dL	
		n (%)		n (%)		n (%)		n (%)		n (%)		n (%)	
2000	13,294	12,776	(96.10)	331	(2.49)	87	(0.65)	89	(0.67)	5	(0.04)	6	(0.05)
1999	10,944	10,362	(94.68)	355	(3.24)	131	(1.20)	90	(0.82)	5	(0.05)	1	(0.01)
1998	8,391	7,779	(92.71)	385	(4.59)	117	(1.39)	95	(1.13)	13	(0.15)	2	(0.02)
1997	6,324	5,565	(88.00)	536	(8.48)	126	(1.99)	88	(1.39)	8	(0.13)	1	(0.02)
1996	7,268	6,748	(92.85)	324	(4.46)	109	(1.50)	83	(1.14)	3	(0.04)	1	(0.01)
1995	5,928	5,261	(88.75)	435	(7.34)	119	(2.01)	104	(1.75)	5	(0.08)	4	(0.07)

Table 4. Distribution of Elevated Results by Ethnic Group for 1998, 1999 and 2000 Combined

	African American	White	Hispanic	Native American	Asian American	Other Race	Race unknown
Percent of Group Reported Elevated	11.2%	3.4%	9.2%	6.3%	2.1%	5.7%	4.5%
Number Tested	3,127	13,044	3,573	458	327	916	11,184

TABLE 5. 2000 Distribution of Blood Lead Levels in Children Less Than Six Years Old by Gender

Gender	Number and Percentage of Tested By Blood Lead Level													
	<10 ug/dL		10-14 ug/dL		15-19 ug/dL		20-44 ug/dL		45-69 ug/dL		>70 ug/dL		Totals	
	n (%)		n (%)		n (%)		n (%)		n (%)		n (%)		n (%)	
female	5,958	(46.6)	138	(41.7)	36	(41.4)	35	(39.3)	2	(40.0)	3	(50.0)	6,172	(46.4)
male	6,657	(52.1)	186	(56.2)	49	(56.3)	54	(60.7)	3	(60.0)	3	(50.0)	6.952	(52.3)
unknown	161	(1.3)	7	(2.1)	2	(2.3)							170	(1.3)
Total	12,776		331		87		89		5		6		13,294	

References:

[1] Agency for Toxic Substances and Disease Registry. Toxicological Profile for Lead. Atlanta, Georgia: U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry, 1993; publication no. PB93-182475.

[2] CDC Preventing Lead Poisoning in Young Children: a statement by the Centers for Disease Control. Atlanta Georgia: U.S. Department of Health and Human Services, Public Health Service, 1991.

[3] EPA 1995, U.S. Environmental Protection Agency, Report on the National Survey of Lead-based Paint in Housing: Base Report. Washington, D.C. EPA 747-R95-003.

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